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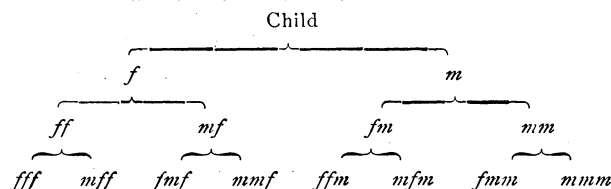
ANTHROPOLOGY.¹

INDIAN ARCHÆOLOGY.—The British authorities in India have prosecuted their archæological researches with commendable zeal. In the year 1880 appeared the charming volume, "The Cave Temples of India," by Messrs. Fergusson and Burgess, and we have now to chronicle the appearance of two elegant quartos forming Vols. IV and V of the Archæological Survey of Western India. Volume IV is a report on the Buddhist cave temples and their inscriptions, being part of the result of the fourth, fifth, and sixth seasons' operations of the Archæological Survey of Western India, 1876–1879, supplementary to "The Cave Temples of India." Volume V is a report on the Eleura cave temples and the Brahmanical and Jaina caves in Western India. Both volumes bear the imprint of Trübner & Co., 1883. Volume IV has sixty photolithographic plates and twenty-five wood-cuts; volume V, fifty-one plates and eighteen wood-cuts. The number of rock-cut temples exceeds a thousand, and though by far the greater number of them are found in the Bombay Presidency and immediately adjoining districts, others exist, either singly or in groups, both in Bengal and Madras. The caves are divided among the three principal religions: the oldest and most extensive to the Buddhist, the next in date to the Brahman, and a smaller series to the Jaina. The oldest of all are the simple cells excavated for Buddhist monks during the reign of Asoka (B. C. 263–225) in the granite rocks of Bihar, and the series extends to the Ajanta caves, probably as late as 700 A. D. The Brahmanical caves extend to the tenth century, while the Jaina excavations, commencing at the same time as the Brahmanical, were continued in the rock at Gwalior to the middle of the fifteenth century. All who have written upon this theme have been unable to repress their enthusiasm in the presence of so much patience, skill, and artistic advancement.

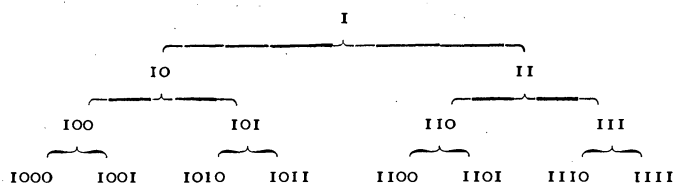
Accompanying these *œuvres de luxe* comes another quarto volume in modest binding and without a single illustration, on the Archæological Survey of Southern India. The title reads: "Lists of Antiquarian Remains in the Presidency of Madras. Compiled under the orders of government by Robert Sewell. Vol. I. Madras, Govt. Press, 1882." The volume is the report of an investigation and correspondence respecting all the known sculptures and monumental inscriptions in the Madras Presidency, in order to prepare the way for a detailed survey, and to furnish general information for the guidance of many residents in Southern India who might be interested in the subject. A slight notion of the magnitude of the work may be gathered from the fact that over 3000 villages are mentioned, and 325 pages are devoted to the enumeration of the remains and inscriptions.

¹ Edited by Professor OTIS T. MASON, 1305 Q street, N. W., Washington, D. C.

NOTATION OF KINSHIP.—The number of any one's ancestors is 2^4 , 2^3 , 2^2 , 2^1 , followed by 2^0 for himself, the binary notation being 10,000, 1000, 100, 10, 1. Every direct ancestor in the n th degree admits of being specified by a particular number, consisting of $n + 1$ places. The two parents are 10 and 11, grandparents 100, 101, 110, 111, and so on. Literally the three past generations would stand thus :



Numerically the same series would be :



In the ancestry the even numbers mark males, the odd, females. Each term carries on its face every step in the descent. Instead of saying, for instance, B was father's mother of A, we say B was 101 of A. If the father's-father's parents of C were the mother's parents of D, we say the 1000-1 of C are the 110-1 of D. The case might have been one of half blood, say by the father's side, then the 1000 of C would be 110 of D. Translating the binary into common figures, we have :

TABLE OF ANCESTRAL ROOTS.

GRADE OF KINSHIP.	FATHER'S SIDE.	MOTHER'S SIDE.
Child.....	1	
Parents.....	2 3	
Grandparents.....	4 5	6 7
Great-grandparents.....	8 9 10 11	12 13 14 15

The sex of 1 is unspecified, but in the other lines the odd numbers are for females, the even for males. If n is the register number of any ancestor, the register number of his parents are $2n$ and $2n + 1$. We can then construct or analyze any register number with great facility. As an example of analysis, write down the number and append to it a series of successive halvings so far as the numbers are, or come out even, otherwise subtract 1 before taking their halves. Then write f (= father of) or m

(= mother of) as the case may be, below each entry. Let 253 be the number, then we get :

253	126	63	15	7	3	child.
<i>m</i>	<i>f</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>	child.

The foregoing is taken from a contribution to *Nature* by Mr. Francis Galton. The *m* and *f* for *mother of* and *father of* confuse one, the same letters having been recently used in an elaborate paper in the *Anthropological Institute Journal* for *male* and *female*. It is to be hoped that Mr. Galton will continue his study on this point and seek to extend the application of the system to classificatory kinship.

GERMAN ANTHROPOLOGY.—The third and the fourth quarterly parts of *Archiv für Anthropologie*, Vol. XIV, come to us in a single binding. Among the original papers the following are of general interest:

A case of abnormal hairiness in a child. By Dr. H. Ranke.

An alate extension of the skin in a human neck. By O. Kobylinski.

The eye of the Fuegians and the sight of the lower races in comparison with that of cultured races. By Dr. Seggel.

Copper alloys, their description and application among ancient peoples. By Dr. E. Reyer.

Account of Russian literature upon Anthropology, Ethnology, and Travel. By Dr. Ludwig Stieda, pp. 387-90.

Review of Scandinavian literature. By Julia Mestorf, pp. 391-410.

Reviews of the Anthropological literature of America. By Dr. Emil Schmidt, pp. 411-435.

Catalogue of anthropological literature :

I. Pristine history and Archæology. By J. H. Müller, 41 pp.

II. Anatomy. By Ad. Pansch, 5 pp.

III. Ethnology and Travels. By Dr. Albrecht Penck, 90 pp.

IV. Zoölogy. By Dr. Georg Boehm, 13 pp.

Account of the anthropological collection of the Schneckenberg Museums at Frankfurt, A. M. By H. Schaaffhausen, 36 pp.

Account of the anthropological collection of the Grand-Ducal Cabinet, in Alten Schlosse, Darmstadt. By H. Schaaffhausen, 25 pp.

Correspondenz-Blatt, from XIII, No. 9, to XIV, No. 4.

The titles of books and other publications mentioned above are not merely a catalogue of names, but important works are followed by abstracts, many of them of great value. The *Archiv* is *facile princeps* among the journals of anthropology.

THE ORIGIN OF INVENTION.—In February last Colonel F. A. Seely, examiner in the U. S. Patent Office, read a paper before the Washington Anthropological Society on the Origin of Invention. It is well known that one whose daily life is spent among human inventions must acquire a semi-automatic habit of looking at all things in a peculiar manner. For instance, while we search for the rudest form of a machine and follow up its improvements to the perfected form, Colonel Seely would go just the other way,

examine the perfected form and try to understand the machine by a series of eliminations. He first, by way of explaining his method, eliminates the improvements on the steam engine until he gets us back to a savage man blowing through a hollow reed that nature supplied. This was the starting point of invention, a purely human characteristic. The author then applies his method to bows and arrows, stone implements, etc., and is brought to the following conclusion:

"It is clear that neither to Professor Dawkins and Professor Gaudry, nor to Mr. Grant Allen, is it hard to imagine that a creature, inferior to man both in physical and mental structure, may have made such progress in art as to be able to work so difficult a material as flint, and to have developed such wants as to call for the practice of that art. All lose sight of the nature of art and the laws of human progress, and they indicate a conception of art prior to man, but an inability to conceive of man as existing without a certain degree of progress in art. It would seem to them that the first human creature, whatever his origin, must have signalized his advent and perpetuated his memory literally in a

‘Monumentum aere perennius,’

by instantly, without preparation or conscious need, chipping out tools of flint. The quotation from Lucretius,

‘Arma antiqua manus, ungues, dentes fuere,
Et lapides, et item sylvarum fragmina rami,’

is misapplied by archæologists. *Lapides* does not mean flaked or polished stone any more than *fragmina rami* means dressed timber."

The author traces back of the rudest wrought stone, an age of wood, and other perishable materials, and anterior to that the age without invention.

MICROSCOPY.¹

RECENT IMPROVEMENTS IN SECTION-CUTTING.—In sectioning objects imbedded in paraffine, the knife is generally fixed, by a clamp, more or less obliquely to the carrier, and the sections almost invariably roll. The rolling of the sections, which is caused by the bevel given to the cutting edge of the knife in sharpening it, besides leading to difficulties of manipulation in the process of mounting, often injures or completely ruins the sections. Many efforts have been made to find some convenient means of preventing the rolling, and very recently successful methods and instruments have been devised to meet the difficulty. In some knives I have found places where the edge was so thin that the bevel appeared wholly wanting. Such portions of the knife usually cut without causing the sections to roll; and this fact might

¹ Edited by Dr. C. O. WHITMAN, Mus. Comparative Zoology, Cambridge, Mass.